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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,494	08/29/2001	Mitsuru Senoo	A34630	6246
21003	7590	01/14/2005	EXAMINER	
			PROCTOR, JASON SCOTT	
		ART UNIT		PAPER NUMBER
				2123

DATE MAILED: 01/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/941,494	SENOO ET AL.	

Examiner
Jason Proctor

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-8 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 29 August 2001 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Priority

1. Applicant's request for priority under 35 U.S.C. § 119(a)-(d) to previously filed Japanese patent application number 2000-266443 is acknowledged.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-8 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1-8 all recite at least one step of computing a value related to the performance of an air blow system, however the disclosure is silent as to how these calculations are performed. At page 2, lines 6-11, the specification states:

However, it takes much time and labor to perform calculation for minimization of the pressure drop in the air blow system and for improvement in the effect of air blow. Therefore, almost no attempt has heretofore been made to perform such calculation in the prior art.

Such a teaching establishes that the problem of computing values for an air blow system under design is difficult and generally unknown in the prior art. The disclosure fails to provide teachings for dealing with this problem. To wit, at page 6, line 16 – page

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7, line 2, Figs. 2-6 are described as flowcharts showing the flow of computation at steps S3, S6, S17, S23, and S26 in Fig. 1. More specifically regarding S3, at page 9, line 25 – page 10, line 1, the specification states:

If it is judged at step S3-2 that “nozzle immediately upstream pressure” was inputted, calculation of the blow impact pressure is performed at step S3-3 according to the equation shown in the box of step S3-3.

However, the equation shown in the box of step S3-3 merely conveys that the blow impact pressure is defined by a function taking three parameters: nozzle immediately upstream pressure, work distance, and nozzle inner diameter. There is no teaching of the actual computation performed to arrive at the blow impact pressure.

4. Similar deficiencies exist for computations S6, S17, S23, and S26. The disclosure omits any meaningful equations which would convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had arrived at a method of performing the calculations which are taught as being difficult and generally unknown in the prior art and thus that the inventor(s) had possession of the claimed invention.

5. Claims 1-8 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 1-8 all recite several steps which are described in the specification using passive voice making it uncertain which steps of the method are to be performed by the invention and which are to be performed by a human operator.

6. For example, "The system is arranged so that computation can be performed a desired number of times necessary for minimization of the consumption flow rate by inputting an improvement value obtained by appropriately changing the nozzle diameter or the nozzle immediately upstream pressure on the basis of a judgment on the above-described computation results under the conditions that the work distance and blow impact pressure of the air blow nozzle are kept constant," (page 11, lines 16-24). There is no clear indication whether the human operator or the invention performs the computation. There is no clear indication whether the human operator or the invention obtains the improvement value.

7. For example, "At step S8 in Fig. 1, a choice is made as to whether or not to enter the computation result of improvement 1. If the operator chooses to enter the computation result at step S8, the computation result is entered at step S9. Then the process proceeds to step S10. If the operator chooses not to enter the computation result at step S8, the process proceeds to step S10. A choice is made at step S10 as to whether or not to change the present state. If it is necessary to change the present state, the process returns to step S2. If the present state need not be changed, the process proceeds to step S11," (page 13, lines 3-13). There is no clear indication whether the human operator or the invention derives the computation result. There is no clear indication whether the human operator or the invention makes the choice at step S10.

8. As a result of the above examples and other uses of passive voice throughout the specification, a person of ordinary skill in the art to which Applicant's invention

pertains would be unable to make and/or use the invention because it is unknown what functionality is present in Applicant's invention and what functionality is provided by the human operator.

9. In general, the specification is replete with the use of passive voice and the Examiner respectfully suggests revising the specification, avoiding the use of passive voice, so as to clearly distinguish the steps and functionality performed by the invention from those performed by a human operator.

10. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1-8 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Claims 1-8 all recite at least one step of computation, however the teachings of the specification make it unclear whether a human operator or the invention performs the computation. Further, the teachings of the disclosure do not define what the computations comprise or what form they take.

13. Claims 1 and 5 recite the step "inputting an improvement value of either one of the nozzle diameter and the nozzle immediately upstream pressure on a basis of a judgment on computation results" which renders these claims vague and indefinite. It is unclear whether a human operator or the invention performs the inputting. It is unclear whether a human operator or the invention performs the judgment.

14. Claims 3, 4, 7, and 8 recite the step of “selecting upstream piping system devices and a pressure-reducing valve that are conformable to the computed recommended circuit electromagnetic valve sonic conductance and recommended circuit pipe inner diameter” which renders these claims vague and indefinite. It is unclear whether a human operator or the invention performs the selecting.

15. Claim 5 recites the step “computing a compressed air consumption flow rate and either one of a nozzle immediately upstream pressure and a nozzle diameter from the improvement value a necessary number of times, thereby selecting a nozzle diameter and a nozzle immediately upstream pressure that provide a lowest compressed air consumption flow rate” which renders the claim vague and indefinite. It is unclear how performing a computation a necessary number of times will result in selecting components that provide a lowest consumption flow rate. It is unclear how the selecting is done and it is unclear whether it is performed by the human operator or the invention.

16. Claims 6, 7, and 8 recite a recording medium storing a program for selecting devices for an air blow system by using a computer, said program comprising the steps of inputting a number of parameters and performing a computation, making it impossible to determine the metes and bounds of the claim. The term “recording medium” is so broad that the patent protection sought by the claim is unclear. As an apparatus, it is unknown to the Examiner precisely what function is provided by a recording medium storing a program. The Examiner acknowledges that a readable medium could deliver program instructions to a computer processor and readability could be an inherent property of a computer-accessible recording medium, however the broader term

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"recording medium" does not clearly necessitate readability nor the ability to deliver program instructions to a computer processor.

17. In general, the claims are replete with 35 U.S.C. § 112, second paragraph issues, many of which result from the enablement and written description rejections of the specification under 35 U.S.C. § 112, first paragraph as detailed above. The Examiner respectfully suggests Applicant review the claim limitations for compliance with 35 U.S.C. § 112, second paragraph beyond the claim rejections presented above in order to expedite prosecution.

Claim Interpretation

18. In the interest of compact prosecution, examiner makes the following claim interpretations in order to apply prior art to the claims. See *Ex parte Ionescu*, 222 USPQ 537 (Bd. Pat. App. & Inter. 1984).

19. Regarding claims 1-8, the steps of computation are interpreted as being performed by the invention and according to techniques well known in the art, such as Bernoulli's equation for pressure and velocity of fluid motion.

20. Regarding claims 1-8, steps of inputting are interpreted as being performed by a human operator.

21. Regarding claims 3, 4, 7, and 8, the steps of selecting are interpreted as confirming that the input from the human operator regarding the system components satisfies the system requirements.

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22. Regarding claims 6, 7, and 8, the term "recording medium storing a program" is interpreted as "computer readable medium storing a computer program".

Claim Rejections - 35 USC § 101

23. 35 U.S.C. § 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

24. Claims 1-8 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

25. Claims 1-8 all recite steps of computation, inputting, and selection. MPEP 2106(IV)(B)(1) states:

If the "acts" of a claimed process manipulate only numbers, abstract concepts or ideas, or signals representing any of the foregoing, the acts are not being applied to appropriate subject matter. *Schrader*, 22 F.3d at 294-95, 30 USPQ2d at 1458-59. Thus, a process consisting solely of mathematical operations, i.e., converting one set of numbers into another set of numbers, does not manipulate appropriate subject matter and thus cannot constitute a statutory process.

In practical terms, claims define nonstatutory processes if they:

- consist solely of mathematical operations without some claimed practical application (i.e., executing a "mathematical algorithm"); or
- simply manipulate abstract ideas, e.g., a bid (*Schrader*, 22 F.3d at 293-94, 30 USPQ2d at 1458-59) or a bubble hierarchy (*Warmerdam*, 33 F.3d at 1360, 31 USPQ2d at 1759), without some claimed practical application.

26. In the Examiner's broadest reasonable interpretation of the claims, as explained in Claim Interpretation, the steps of inputting are performed by a human operator while the steps of selecting are the direct results of computation. What remains to be performed by the invention are the steps of computation thereby establishing the claimed invention as a mathematical algorithm. The claimed invention is therefore nonstatutory for consisting solely of mathematical operations.

27. Further, the limitations of claims 1-5 do not specifically require that a computer-implemented embodiment of the invention perform the computations, but instead recite a method "using a programmed computer" which comprises steps including computing.

MPEP 2105 states:

If the broadest reasonable interpretation of the claimed invention as a whole encompasses a human being, then a rejection under 35 U.S.C. 101 must be made indicating that the claimed invention is directed to nonstatutory subject matter. Furthermore, the claimed invention must be examined with regard to all issues pertinent to patentability, and any applicable rejections under 35 U.S.C. 102, 103, or 112 must also be made.

28. Since methods historically known in the art, such as Bernoulli's equation for pressure and velocity in fluid motion, are well known to have been computed by human beings and the limitations of claims 1-5 do not clearly recite that the programmed computer performs the steps of computing, the broadest reasonable interpretation of the claims encompasses a human being and are rejected under 35 U.S.C. § 101.

29. Further, claims 6-8 recite "a recording medium storing a program", the broadest reasonable interpretation of which encompasses all types of recording media, both accessible and inaccessible to a computer system. MPEP 2106(IV)(B)(1)(a) states:

Data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See, e.g., Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory.

Similarly, computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer

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programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. Accordingly, it is important to distinguish claims that define descriptive material per se from claims that define statutory inventions.

30. Therefore claims 6-8, which recite computer programs not claimed with a functional interrelationship between a computer and the computer program, are rejected as being nonstatutory descriptive material.
31. To expedite a complete examination of the instant application the claims rejected under 35 U.S.C. § 101 (nonstatutory) above are further rejected as set forth below in anticipation of applicant amending these claims to place them within the four statutory categories of invention.

Claim Rejections - 35 USC § 103

32. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

33. Claims 1-8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over "Mechanical Engineers' Handbook", second edition, edited by Myer Kutz, hereafter referred to as Kutz.

34. Regarding claims 1-8, Kutz teaches computations for viscous fluid flow in ducts (sections 40.11-40.13, specifically pages 1326-1328 regarding nozzles), including

nozzle diameter (Fig. 40.40 (b), dimension *d*) and using Bernoulli equations (equations on page 1327).

35. Further, by Applicant's own admission (specification, page 1, lines 21-26) it is known in the art that the effect of air blow (blow impact pressure, etc.) is determined by the nozzle diameter, the pressure immediately upstream of the nozzle, and the work distance (i.e. the distance between the nozzle and the workpiece).

36. Although Kutz does not expressly teach a system using a computer or a computer readable storage medium storing a computer program to execute a method for solving these equations, MPEP 2144.04(III) states:

In re Venner, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958) (Appellant argued that claims to a permanent mold casting apparatus for molding trunk pistons were allowable over the prior art because the claimed invention combined "old permanent-mold structures together with a timer and solenoid which automatically actuates the known pressure valve system to release the inner core after a predetermined time has elapsed." The court held that broadly providing an automatic or mechanical means to replace a manual activity which accomplished the same result is not sufficient to distinguish over the prior art.).

37. The claimed inventions of claims 1-8 automate the manual process of solving the equations taught by Kutz for viscous fluid flow in ducts. Regarding the recited steps of inputting in claims 1-8, Applicant's specification teaches that a human operator performs these steps. Regarding the recited steps of selecting, Applicant's specification teaches that these steps are the result of the computing steps.

38. It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to automate the previously manual steps of computing equations for viscous fluid flow in ducts as taught by Kutz by performing them using a computer. It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to include the factors which determine the effect of air blow as known in the

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art. It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to prompt a human operator for user input and to select the system parameters that produce the desired performance according to the equations for viscous fluid flow in ducts. Such a system would reduce the design time and increase the reliability in the design for the proposed system.

Conclusion

Art considered pertinent by the examiner but not applied has been cited on form PTO-892. The Examiner respectfully requests thorough consideration of Normann et al., US Patent No. 6,131,077 which teaches performing a hydraulic analysis when designing a distribution system for a building, such as a sprinkler system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The examiner can normally be reached on 8:30 am-4:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin J Teska can be reached on (571) 272-3716. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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